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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/892,347	06/27/2001	Donald Henry Willis	PU010055	3517

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EXAMINER	
ANYASO, UCHENDU O	
ART UNIT	**PAPER NUMBER**
2675	6

DATE MAILED: 11/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/892,347	WILLIS, DONALD HENRY	
	Examiner	Art Unit	
	Uchendu O Anyaso	2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 August 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12 and 15-17* is/are rejected.

7)☒ Claim(s) *13 and 14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. **Claims 1-17** are pending in this action.

Claim Rejections - 35 USC ' 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 1, 6** and **11** and are rejected under 35 U.S.C. 103(a) as being unpatentable over *Gadeyne et al* (U.S. 6,359,663) in view of *Ho et al* (U.S. 6,208,327).

Regarding **independent claims 1** and **6,** Gadeyne teaches a method of reducing artifacts in an image display by teaching the conversion or generation of a video signal so that motion artifacts which are caused by the difference in luminance response times for rise and decay are canceled out (*see* Abstract; column 2, lines 45-51). This is accomplished by displaying images of TV pictures and/or data information on a video display system equipped with a liquid crystal display device (column 1, lines 8-13).

Furthermore, Gadeyne teaches how his invention uses gamma-correctors (35, 40) (*see* column 7, lines 22-45, figure 13 at 35, 40).

Furthermore, Gadeyne teaches how to slew rate limit the video signals by process delaying a video signal in order to match the processing delays and reduce artifacts wherein a first video signal is converted into a second video signal so that the faster luminance response of a picture element of the first video signal is slowed down in order to match the luminance

response in time and amplitude to the known slower luminance response of the same or another picture element for the opposite change of the first video signal (column 3, lines 35-42). Also, Gadeyne teaches the conversion of a first video signal to the second video signal so that the slower luminance response of a picture element to a change of the first video signal is accelerated in order to match the luminance response in time and amplitude to the known faster luminance response of the same or another picture element for the opposite change oft the first video signal (column 3, lines 42-49).

However, Gadeyne does not teach reducing sparkle artifacts. However, Ho teaches this concept by teaching a method and an apparatus for eliminating image artifacts due to imaging of post spacers, and is applicable for correction of sub-pixel defects and column disclinations that are present in any display technology that has matrix addressed pixels (column 2, lines 26-34). (In applicant's Remarks, Applicant explains that sparkle artifacts are caused by disclination, and the image artifact caused by disclination and perceived by the viewer is denoted sparkle. As such the disclinations shown in Ho represent similar artifacts explained by applicant).

Thus, it would have been obvious to a person of ordinary skill in the art to combine Gadeyne and Ho because while Gadeyne teaches a method of reducing artifacts in an image display by teaching how to slew rate limit the video signals by process delaying a video signal in order to match the processing delays and reduce artifacts, method and an apparatus for eliminating image sparkle artifacts by correcting sub-pixel defects and column disclinations that are present in any display technology that has matrix addressed pixels (column 2, lines 26-34).

The motivation for combining these inventions would have been to improve the image quality (column 2, lines 35-38).

Regarding **claim 11**, in further discussion of claims 6, Gadeyne teaches how his invention uses gamma-correctors (35, 40) (*see* column 7, lines 22-45, figure 13 at 35, 40).

Furthermore, Gadeyne teaches how to combine a slew rate limit and processing delay of a video signals in order to match the processing delays and reduce artifacts by teaching how to convert a first video signal into a second video signal so that the faster luminance response of a picture element of the first video signal is slowed down in order to match the luminance response in time and amplitude to the known slower luminance response of the same or another picture element for the opposite change of the first video signal (column 3, lines 35-42).

Also, Gadeyne teaches the conversion of a first video signal to the second video signal so that the slower luminance response of a picture element to a change of the first video signal is accelerated in order to match the luminance response in time and amplitude to the known faster luminance response of the same or another picture element for the opposite change oft the first video signal (column 3, lines 42-49).

Regarding **claims 16** and **17**, in further discussion of claims 1 and 6, Ho teaches a method and apparatus for eliminating image artifacts due to imaging of post spacers, and is applicable for correction of sub-pixel defects and column disclinations that are present in any display technology that has matrix addressed pixels (column 2, lines 26-34). (In applicant's Remarks, Applicant explains that sparkle artifacts are caused by disclination, and the image artifact

caused by disclination and perceived by the viewer is denoted sparkle. As such the disclinations shown in Ho represent similar artifacts explained by applicant).

4. **Claims 2, 3** and **5** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Gadeyne et al* (U.S. Patent 6,359,663) in view of *Ho et al* (U.S. 6,208,327), as in claim 1, and further in view of *Kunzman* (U.S. 6,392,717).

Regarding **claims 2**, in further discussion of claims 1, Gadeyne teaches how his invention uses gamma-correctors (35, 40) (*see* column 7, lines 22-45, figure 13 at 35, 40), and Ho teaches how to eliminate artifacts with disclinations. However, Gadeyne and Ho do not teach red, blue or green gamma corrected video drive components. On the other hand, Kunzman teaches how his invention gamma corrects a video drive signal by teaching how an input is received at a video processor 32 which then performs functions such as color-space conversion, degamma processing and error diffusion functions wherein the display device is enabled to perform gamma correction on the input signal (column 5, line 59 through column 6, line 8, figure 3 at 32) such that the image data is converted into red, green and blue data prior to display (column 11, line 41 through column 12, line 25; *see also* column 5, lines 1-56).

Thus, it would have been obvious to a person of ordinary skill in the art to combine Gadeyne, Ho, and Kunzman because while the combination of Gadeyne and Ho teach how to reduce artifacts, and gamma-correctors (35, 40) (*see* column 7, lines 22-45, figure 13 at 35, 40), Kunzman teaches how his invention gamma corrects a video drive signal which comprise red, blue and green components (column 11, line 41 through column 12, line 25; *see also* column 5,

lines 1-56). The motivation for combining these inventions would have been to design a display system capable of producing better images (*see* Kunzman at column 2, lines 37-40).

Regarding **claims 3** and **5**, in further discussion of claims 2, Gadeyne teaches how his invention uses gamma-correctors (35, 40) (*see* column 7, lines 22-45, figure 13 at 35, 40).

Furthermore, Gadeyne teaches how to combine a slew rate limit and processing delay of a video signals in order to match the processing delays and reduce artifacts by teaching how to convert a first video signal into a second video signal so that the faster luminance response of a picture element of the first video signal is slowed down in order to match the luminance response in time and amplitude to the known slower luminance response of the same or another picture element for the opposite change of the first video signal (column 3, lines 35-42).

Also, Gadeyne teaches the conversion of a first video signal to the second video signal so that the slower luminance response of a picture element to a change of the first video signal is accelerated in order to match the luminance response in time and amplitude to the known faster luminance response of the same or another picture element for the opposite change oft the first video signal (column 3, lines 42-49).

5. **Claims 4, 7** and **8** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Gadeyne et al* (U.S. Patent 6,359,663) in view of *Ho et al* (U.S. 6,208,327), as in claims 1 and 6 above, and further in view of *Medin et al* (U.S. 5,936,621).

Regarding **claims 4, 7** and **8**, in further discussion of claims 1 and 6, Gadeyne and Ho do not teach how to deinterlace a video signal. On the other hand, Medin teaches flicker filter

circuits which function to deinterlace the video signals in order to reduce the flicker by providing a summation of the input data in order to reduce the high frequency component of the video line being display (*see* column 3, lines 40-61).

Thus, it would have been obvious to a person of ordinary skill in the art to combine Gadeyne, Ho, and Medin's inventions because while the combination of Gadeyne and Ho teach how to combine a slew rate limit and processing delay of a video signals in order to match the processing delays and reduce artifacts, Medin teaches flicker filter circuits which function to deinterlace the video signals by reducing the flicker by providing a summation of the input data in order to reduce the high frequency component of the video line being display (*see* column 3, lines 40-61). The motivation for combining these inventions would have been to reduce flicker in the display system (*see* column 3, lines 40-61).

Furthermore, Medin discloses how flicker filters 50 process color portions of the video signal 30 (column 5, lines 6-15).

Furthermore, Medin teaches how the input operates in frames of input data wherein the flicker reduction circuit comprises a synchronization circuit 82 and an adder/subtractor 88 (column 5, lines 55-60, figure 7 at 82, 88) such that the synchronization function 82 accepts a linear progression of video lines 80 as input, and outputs a sequence of at least two synchronized video lines, shown as video lines n to n+m; in a preferred embodiment, video lines n+1 to n+m are progressively delayed so that their sequence of control variables are synchronized in time with the control variables in video line n (column 5, lines 61 through column 6, line 3, figure 7 at 80, 82).

Furthermore, Gadeyne teaches how his invention uses gamma-correctors (35, 40) (*see* column 7, lines 22-45, figure 13 at 35, 40).

6. **Claims 9** and **10** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Gadeyne et al* (U.S. Patent 6,359,663) in view of *Ho et al* (U.S. 6,208,327), and further in view of *Medin et al* (U.S. 5,936,621), as in claim 8, and further in view of *Kunzman* (U.S. 6,392,717).

Regarding **claim 9**, in further discussion of claims 8, Gadeyne teaches how his invention uses gamma-correctors (35, 40) (*see* column 7, lines 22-45, figure 13 at 35, 40). However, Gadeyne, Ho and Medin do not teach red, blue or green gamma corrected video drive components. On the other hand, Kunzman teaches how his invention gamma corrects a video drive signal by teaching how an input is received at a video processor 32 which then performs functions such as color-space conversion, degamma processing and error diffusion functions wherein the display device is enabled to perform gamma correction on the input signal (column 5, line 59 through column 6, line 8, figure 3 at 32) wherein the image data is converted into red, green and blue data prior to display made up of a source of light comprising one white light source and a color wheel with red, green, blue and clear segments (column 11, line 41 through column 12, line 25; *see also* column 5, lines 1-56).

Thus, it would have been obvious to a person of ordinary skill in the art to combine Gadeyne, Ho, Medin and Kunzman because while the combination of Gadeyne, Ho, Medin teach how the use of gamma-correctors (35, 40) (*see* column 7, lines 22-45, figure 13 at 35, 40), Kunzman teaches how his invention gamma corrects a video drive signal which comprise red, blue and green components (column 11, line 41 through column 12, line 25; *see also* column 5,

lines 1-56). The motivation for combining these inventions would have been to design a display system capable of producing better images (*see* Kunzman at column 2, lines 37-40).

Regarding **claim 10**, in further discussion of claims 9, Gadeyne teaches how his invention uses gamma-correctors (35, 40) (*see* column 7, lines 22-45, figure 13 at 35, 40).

Furthermore, Gadeyne teaches how to combine a slew rate limit and processing delay of a video signals in order to match the processing delays and reduce artifacts by teaching how to convert a first video signal into a second video signal so that the faster luminance response of a picture element of the first video signal is slowed down in order to match the luminance response in time and amplitude to the known slower luminance response of the same or another picture element for the opposite change of the first video signal (column 3, lines 35-42).

Also, Gadeyne teaches the conversion of a first video signal to the second video signal so that the slower luminance response of a picture element to a change of the first video signal is accelerated in order to match the luminance response in time and amplitude to the known faster luminance response of the same or another picture element for the opposite change oft the first video signal (column 3, lines 42-49).

7. **Claims 12** and **15** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Gadeyne et al* (U.S. Patent 6,359,663) in view of *Ho et al* (U.S. 6,208,327), as in claim 11 above, and further in view of *Sani et al* (U.S. 6,219,101).

Regarding **claim 12**, in further discussion of claims 11, Gadeyne teaches an algebraic unit in the form of a subtractor 36, a latch in the form of a one-frame memory FM, and a second

algebraic unit in the form of a first and second adder (37, 38) (*see* figure 13 at 36-39, column 7, lines 21-29).

However, Gadeyne and Ho do not teach a comparator that determines the outputs of the algebraic unit. On the other hand, Sani teaches an invention that relates to video signal processing and to converting video signals from a format such as RGB having sequential scanning to an interlaced scanning format as used in composite video wherein comparators (114, 116, 120) are used so as to provide 256 comparison levels (column 8, lines 23-39, figure 6 at 114, 116, 120; column 1, lines 10-13).

Thus, it would have been obvious to a person of ordinary skill in the art to combine Gadeyne, Ho, and Sani's inventions because while the combination of Gadeyne and Ho teaches how to combine a slew rate limit and processing delay of a video signals in order to match the processing delays and reduce artifacts by teaching how to convert a first video signal into a second video signal so that the faster luminance response of a picture element of the first video signal is slowed down in order to match the luminance response in time and amplitude to the known slower luminance response of the same or another picture element for the opposite change of the first video signal (column 3, lines 35-42), Sani teaches an invention that relates to video signal processing and to converting video signals from a format such as RGB having sequential scanning to an interlaced scanning format as used in composite video wherein comparators (114, 116, 120) are used so as to provide 256 comparison levels (column 8, lines 23-39, figure 6 at 114, 116, 120; column 1, lines 10-13). The motivation for combining these inventions would have been to provide an efficient method of preventing flickering in a display device (column 1, lines 50-58).

Regarding **claim 15**, Sani teaches a multiplexer in the form of a 256-to-8 bit converter 128 that is connected to the comparators (114, 116, 120) (figure 6 at 128).

Allowable Subject Matter

8. **Claims 13** and **14** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

9. Applicant's amendments and arguments filed August 15, 2003 have been fully considered but they are not persuasive.

Applicant amended independent claims 1 and 6 to emphasize how sparkle artifacts in the liquid crystal imager are reduced. Furthermore, applicant added new claims 16 and 17 that highlight the fact that sparkle artifacts are caused by disclinations. Applicant then contends that none of the references used in the earlier Office Action teach how to reduce the sparkles as defined in Applicant's invention.

In response to Applicant's amendments, Ho (U.S. 6,208,327) is used to achieve the newly added claimed features of reducing sparkle artifacts that are caused by disclinations. Specifically, Ho teaches a method and an apparatus for eliminating image artifacts due to imaging of post spacers, and is applicable for correction of sub-pixel defects and column **disclinations** that are present in any display technology that has matrix addressed pixels

(column 2, lines 26-34). In applicant's Remarks, Applicant explains that sparkle artifacts are caused by disclination, and the image artifact caused by disclination and perceived by the viewer is denoted sparkle. As such the disclinations shown in Ho represent similar artifacts explained by applicant.

Thus, it would have been obvious to a person of ordinary skill in the art to combine Gadeyne and Ho because while Gadeyne teaches a method of reducing artifacts in an image display by teaching how to slew rate limit the video signals by process delaying a video signal in order to match the processing delays and reduce artifacts, method and an apparatus for eliminating image sparkle artifacts by correcting sub-pixel defects and column disclinations that are present in any display technology that has matrix addressed pixels (column 2, lines 26-34). The motivation for combining these inventions would have been to improve the image quality (column 2, lines 35-38).

Conclusion

10. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Uchendu O. Anyaso whose telephone number is (703) 306-5934. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Saras, can be reached at (703) 305-9720.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Uchendu O. Anyaso

11/01/2003

STEVEN SARAS
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